CALIFORNIA DEPARTMENT OF HEALTH SERVICES
850 Marina Bay Parkway, Richmond, CA 94804

ENVIRONMENTAL MANAGEMENT BRANCH
Marine Biotoxin Monitoring Program

Monthly Marine Biotoxin Report

July 2003

Technical Report No. 03-18

INTRODUCTION:

This report provides a summary of biotoxin activity for the month of July 2003. Ranges of toxin concentrations are provided for the paralytic shellfish poisoning (PSP) toxins and for domoic acid (DA). Estimates are also provided for the distribution and relative abundance of *Alexandrium*, the dinoflagellate that produces PSP toxins, and *Pseudo-nitzschia*, the diatom that produces domoic acid. Summary information is also provided for any quarantine or health advisory that was in effect during the reporting period.

Please note the following conventions for the phytoplankton and shellfish biotoxin distribution maps: (i) All estimates for phytoplankton relative abundance are qualitative, based on sampling effort and percent composition; (ii) All toxin data are for mussel samples, unless otherwise noted; (iii) All samples are assayed for PSP toxins; DA analyses are performed as needed (i.e., on the basis of detected blooms of the diatoms that produce DA); (iv) Please refer to the appropriate figure key for an explanation of the symbols used on the maps.

Southern California Summary:

Paralytic Shellfish Poisoning:

Alexandrium was not observed at any Southern California sites during July (Figure 1). PSP toxicity was not detected in any

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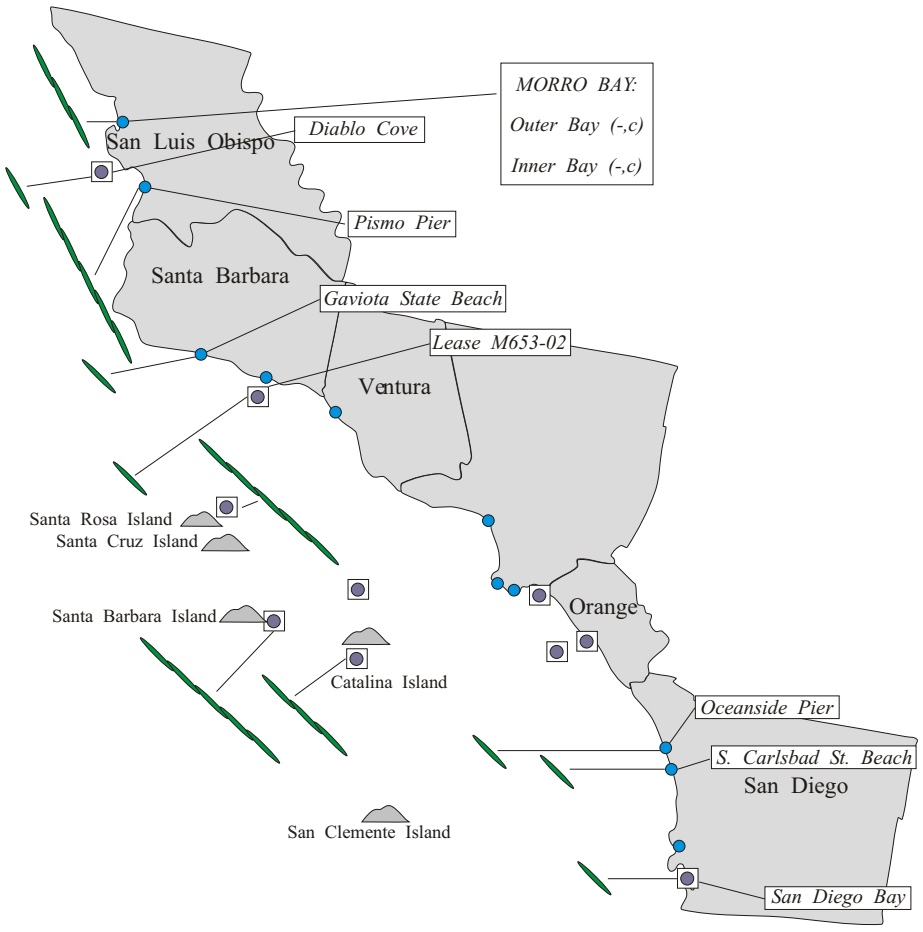
Figure 1. Distribution of toxin-producing phytoplankton in Southern California during July, 2003.



Relative Abundance of Known Toxin Producers

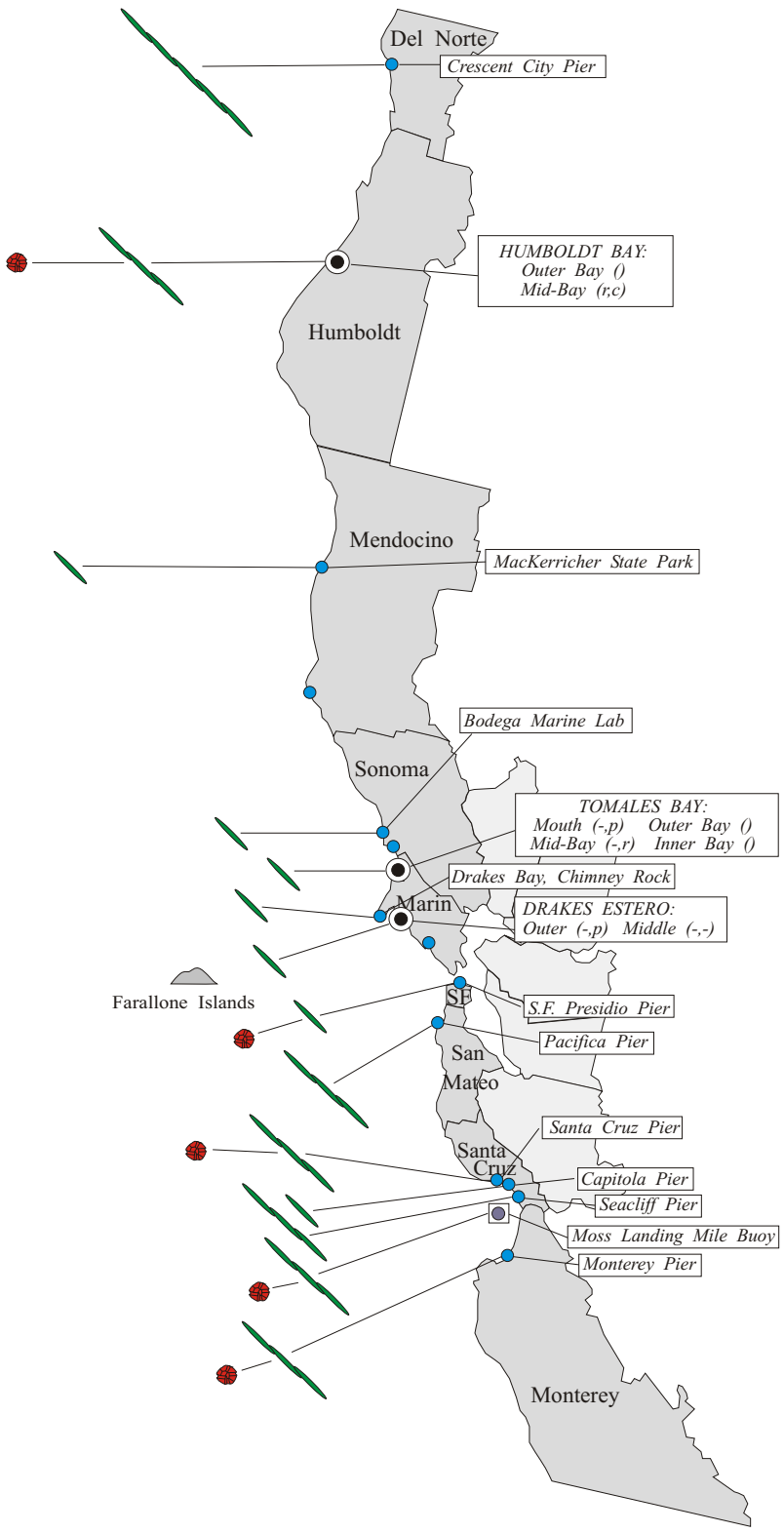
Alexandrium Species	Pseudo-nitzschia Species
Rare (less than 1%)	Present (less than 10%)
Present (between 1% and 10%)	Common (between 10% and 50%)
Common (between 10% and 50%)	Abundant (greater than 50%)
Abundant (greater than 50%)	

For areas with multiple sampling stations, species abundance at each station is represented as follows:
(a,p) = Abundance for Alexandrium and Pseudo-nitzschia.
e.g., (c,p) = common, present; (a,-) = abundant, not observed

MONTHLY SAMPLING STATIONS:

- Single Sampling Station
- Multiple Sampling Stations
- Offshore Sampling Station

Figure 2. Distribution of toxin-producing phytoplankton in Northern California during July, 2003.



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shellfish samples collected at sites along the Southern California coast throughout the month.

Domoic Acid:

The distribution and relative abundance of *Pseudo-nitzschia* continued to decrease along the most of the Southern California coast during July (Figure 1). High relative abundances of this toxin producing diatom continued to be observed along the San Luis Obispo coast at Pismo Pier and inside Morro Bay. Thanks to the Catalina Tall Ships Expeditions educational program we were able to detect significant increases of *Pseudo-nitzschia* at several locations near the Channel Islands, covering a wide area from Santa Rosa Island to Catalina Island. The greatest densities were observed at Pismo Pier in mid-July.

Nontoxic Events:

Of the various nontoxic phytoplankton present in June along the southern California coast, diatoms continued to be common throughout the month from San Luis Obispo through Santa Barbara. *Skeletonema* was most common non-toxic species along the San Luis Obispo coast, while *Chaetoceros*

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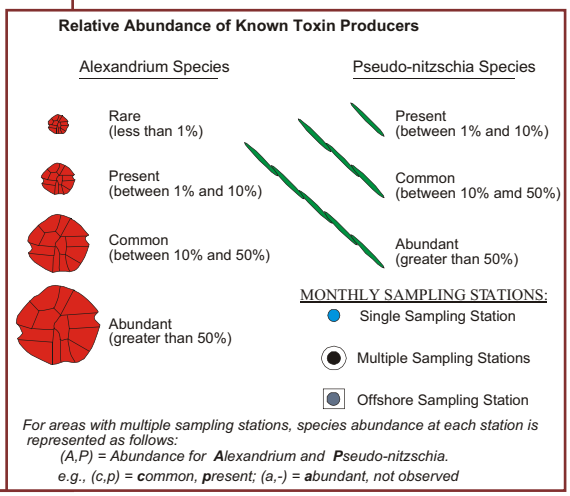
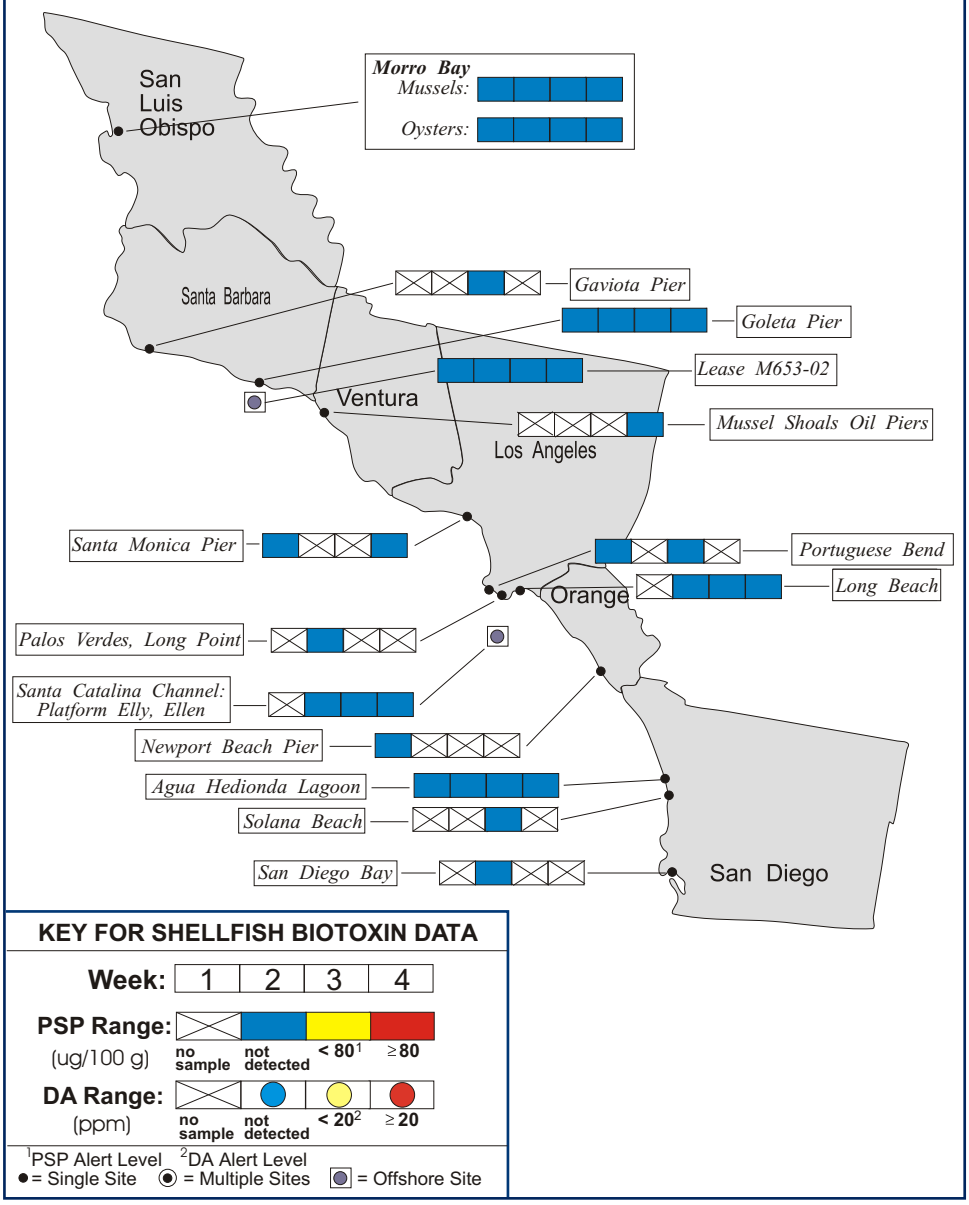


Figure 3. Distribution of shellfish biotoxins in Southern California during July, 2003.



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and *Thalasiosira* were most common in the Santa Barbara region. The dinoflagellate *Prorocentrum* began appearing along the Santa Barbara coast as well. Coastal monitoring sites between Ventura and San Diego were dominated by the dinoflagellates *Lingulodinium polyedrum* (formerly *Gonyaulax polyedra) and Ceratium furca*, with other *Ceratium* species also common. Despite the overall prevalence of dinoflagellates in this region, the diatoms *Chaetoceros* and *Bacteriastrum* were common in San Diego and Orange counties, respectively.

Northern California Summary:

Paralytic Shellfish Poisoning:

Small numbers of *Alexandrium* began appearing at several Northern California sites in July (Figure 2). The first observation of this dinoflagellate occurred on July 1 at the Santa Cruz Pier. By mid-month *Alexandrium* was observed at the Monterey Commercial Pier, offshore of Moss Landing, inside the Golden Gate at the Presidio Pier, and farther north inside Humboldt Bay.

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The Marine Biotoxin Monitoring and Control Program, managed by the California Department of Health Services, is a state-wide effort involving a consortium of volunteer participants. The shellfish sampling and analysis element of this program is intended to provide an early warning of shellfish toxicity by routinely assessing coastal resources for the presence of paralytic shellfish poisoning (PSP) toxins and domoic acid.

The Phytoplankton Monitoring Program is a state-wide program designed to detect toxin producing species of phytoplankton in ocean water before they impact the public. The phytoplankton monitoring and observation effort can provide an advanced warning of a potential toxic bloom, allowing us to focus sampling efforts in the affected area before California's valuable shellfish resources or the public health is threatened.

For More Information Please Call:
(510) 412-4635

For Recorded Biotoxin Information Call:
(800) 553 - 4133

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PSP toxins werre first detected in shellfish at the sentinel mussel site at the U.S. Coast Guard Pier in outer Humboldt Bay on January 15 (Figure 4). Low levels of PSP toxins continued to be detected throughout July at this site and farther inside Humboldt Bay at the Indian Island sentinel station.

Domoic Acid:

Pseudo-nitzschia was present along the entire Northern California coastline during July (Figure 2). The relative abundance and distribution of this diatom remained approximately the same as June's observations, with the exception of an apparent increase inside Humboldt Bay. The greatest cell masses were observed at Crescent City (Del Norte County), Pacifica Pier, and inside Monterey Bay at Seacliff Pier and offshore of Moss Landing in a sample collected by the Pacific Cetacean Group.

Nontoxic Events:

Diatoms continued to dominate the assemblage of phytoplankton species in samples collected by our volunteer network throughout July. *Chaetoceros* was common along most of the coast, with *Skeletonema* common in Del Norte County and *Coscinodiscus* common along the San Francisco and San Mateo coast.

Figure 4. Distribution of shellfish biotoxins in Northern California during July, 2003.

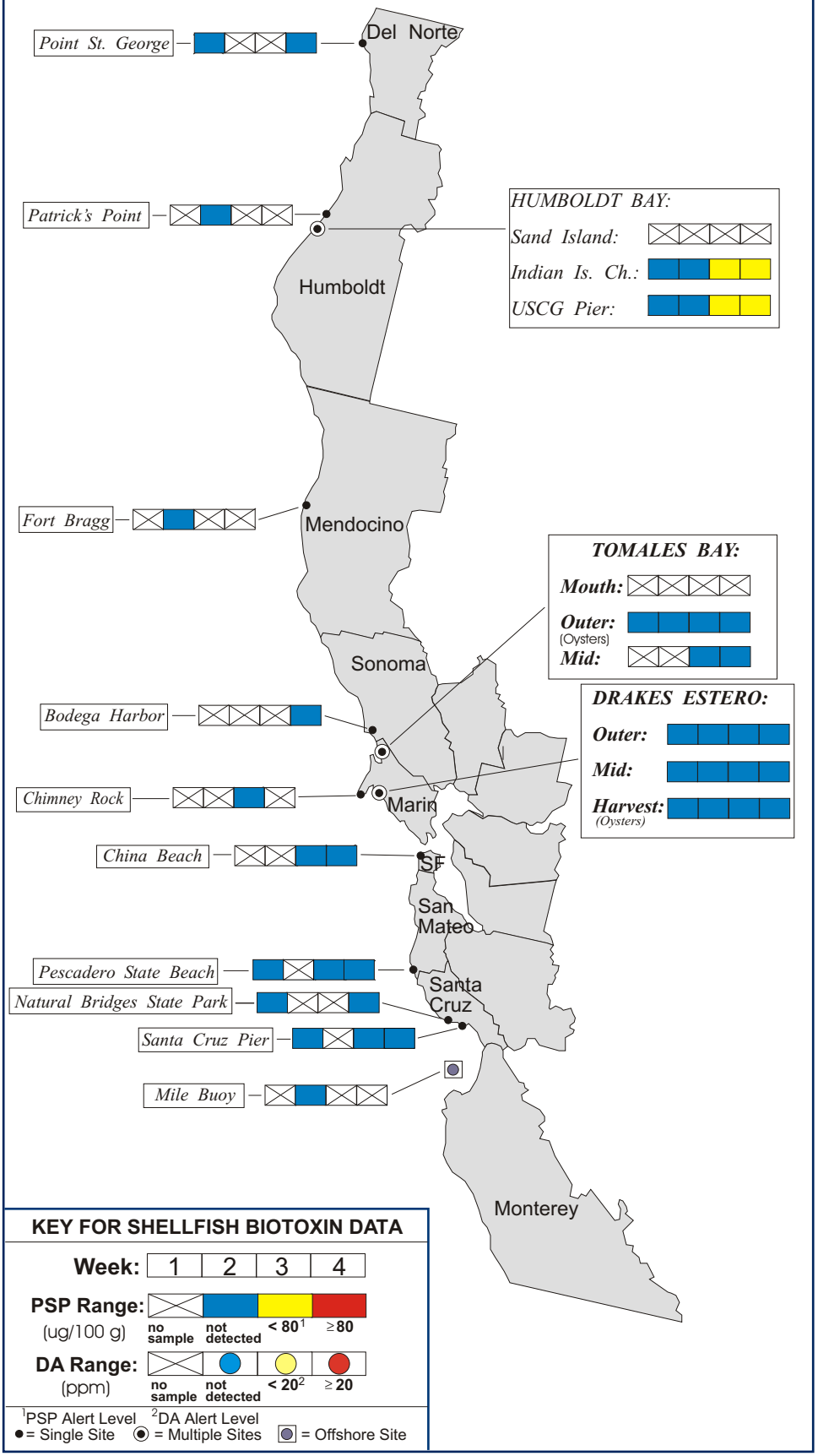


Table 1. California Marine Biotoxin Monitoring Program participants submitting shellfish samples during July, 2003.

COUNTY	AGENCY	# SAMPLES
Del Norte	Del Norte County Health Department	2
Humboldt	Coast Seafood Company	10
	Humboldt County Environmental Health Department	1
Mendocino	Mendocino County Environmental Health Department	1
Sonoma	Sonoma County Environmental Health Department	1
Marin	Cove Mussel Company	2
	Hog Island Oyster Company	5
	Johnson Oyster Company	16
	Marin Oyster Company	5
	CDHS Marine Biotoxin Program	1
San Francisco	San Francisco County Health Department	2
San Mateo	San Mateo County Environmental Health Department	3
Santa Cruz	U.C. Santa Cruz	5
	Santa Cruz County Environmental Health Department	2
Monterey	U.C. Santa Cruz	1
San Luis Obispo	Williams Shellfish Company	8
Santa Barbara	U.C. Santa Barbara Marine Science Institute	5
	Santa Barbara Mariculture Company	4
	California Department of Parks and Recreation	1
Ventura	Ventura County Environmental Health Department	1
Los Angeles	Los Angeles County Health Department	4
	Aquarium of the Pacific Long Beach	4
Orange	Ecomar, Inc.	3
	Orange County Health Care Agency	1
San Diego	Carlsbad Aquafarms, Inc.	4
	CDHS Volunteer (Paul Sims)	2

QUARANTINES:

The annual quarantine on the sport-harvesting of mussels went into effect on May 1st and will continue through October 31st. This annual quarantine applies only to sport-harvested mussels along the entire California coastline, including all bays and estuaries. This quarantine does not affect the commercial shellfish growing areas in California. All commercial shellfish growers certified by the State of California are required to submit routine samples for biotoxin analysis, allowing us to closely monitor for the occurrence of any toxin. Harvesting closures are imposed if toxin levels reach the federal alert level.

Consumers of Washington clams, also known as butter clams, are cautioned to eat only the white meat. Persons taking any clams or scallops are advised to remove and discard the dark parts (i.e., the digestive organs or viscera). Only the white meat of clams and scallops should be prepared for human consumption.

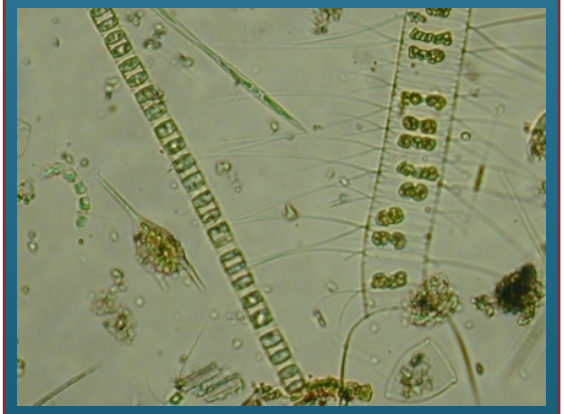
We recommend that persons engaged in the sport-harvesting of any bivalve shellfish (e.g., mussels, clams, scallops) contact the Department's "Shellfish Information Line" at 1-800-553-4133 or (510) 412-4643 for a current update on marine biotoxin activity.

Table 2. Agencies, organizations and volunteers participating in marine phytoplankton sample collection during July, 2003.

COUNTY	AGENCY	# SAMPLES
Del Norte	Del Norte County Health Department	3
Humboldt	Coast Seafood Company	5
Mendocino	CDHS Volunteer (Amy Johnson)	1
	California Department of Parks and Recreation	2
Sonoma	Bodega Marine Laboratory	2
	CDHS Volunteer (Cathleen Cannon)	2
Marin	CDHS Volunteers (Brent Anderson, Cal Strobel, Richard Plant)	9
	Johnson Oyster Company	4
	CDHS Marine Biotoxin Program	1
	California Department of Fish and Game	1
Alameda	None Submitted	
San Francisco	CDHS Volunteer (Eugenia McNaughton)	3
San Mateo	San Mateo County Environmental Health Department	3
Santa Cruz	Santa Cruz County Environmental Health Department	6
Monterey	CDHS Volunteer (Jerry Norton)	2
	Pacific Cetacean Group	1
San Luis Obispo	CDHS Volunteers (Rene and Auburn Atkins)	4
	Morro Bay Natural History Museum	2
	Morro Bay National Estuary Program	4
	Tenera Environmental	3
	CDHS Marine Biotoxin Program	1
Santa Barbara	U.C. Santa Barbara Marine Science Institute	5
	California Department of Parks and Recreation	3
	Santa Barbara Mariculture Company	5
	Catalina Tall Ships Expedition	2
Ventura	Ventura County Environmental Health Department	1
Los Angeles	Los Angeles County Sanitation District	2
	Los Angeles County Health Department	1
	Los Angeles Regional Water Quality Control Board	1
	Catalina Tall Ships Expedition	6
Orange	Orange County Sanitation District	2
San Diego	San Diego County Environmental Health Department	5
	CDHS Volunteer (Paul Sims)	8

PHYTOPLANKTON GALLERY

The diatom Chaetoceros was common along the Northern California coast, as well as at some Southern California sites, during July.



In addition to Chaetoceros, the diatom Skeletonema was common in Crescent City and San Luis Obispo in July.

Absent the previous month, the PSP toxin-producing dinoflagellate Alexandrium occurred in low numbers at several Northern California sampling sites in July.